

EXOTIONS

IOI



WITH
PROFESSOR PENROSE

POTIONS 101

Potions 101
hogwartsishere.com

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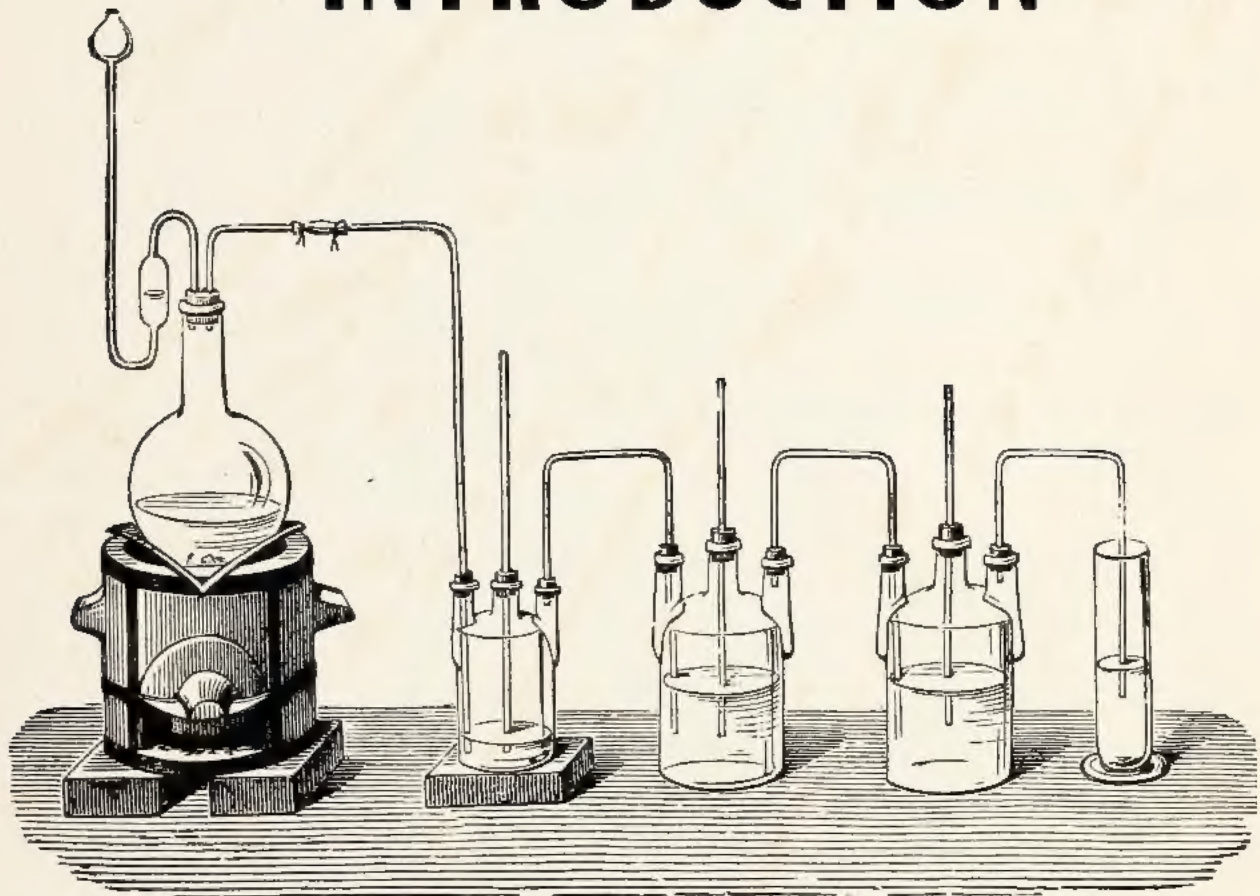
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LESSON 1:

INTRODUCTION



HELLO, HELLO, HELLO

Professor von Graft can be seen leaning against her desk, watching her new students enter the brightly lit classroom in the south end of the castle dungeons. She is encouraged to see so many smiles with a few nervous looks here and there. Her students appear to be just as eager as she is to begin their first year. She watches as the copper moose figurine on her desk hops around enthusiastically, making a small ping pinging noise each time its tiny hooves hit the desk. As the last students file into the room and take their seats, she stands up and waves her wand. The classroom door slowly swings shut and the tiny moose goes still as she addresses the class.

Greetings to all, and welcome to Potions 101! No need to be nervous or anxious about your first day here in the dungeons. I promise not to make this first lesson too exhaustive, but instead give you an administrative overview of the course, and provide the most basic introductions to the concept of potions.

Personal introductions are in order before we dive in. I am Professor Alexa von Graft and I will be your Potions professor during your years here at Hogwarts. I am originally from the United States, hailing from Minneapolis, Minnesota. I grew up on a farm with six brothers and sisters, spending summers planting gardens and baking with my mother, and winters skating on the many frozen ponds that Minnesota has to offer. I attended Ilvermorny School of Witchcraft and Wizardry where I graduated with H.A.R.E.s in Potions, Herbology, and Transfiguration.

When I graduated from Ilvermorny, I returned home to Minnesota, where I attended university, getting Muggle degrees in both biology and chemistry. I have spent time traveling to Italy and Ireland, mostly to study ancient chemistry, native plants, and advanced potion theory.

I was invited to come to Hogwarts to fill the Potions position after Professor Baine stepped down. She was an exemplary potions mistress and I am honoured to be following in her footsteps. If you have any questions during your potions lessons, please don't hesitate to send me an owl or contact one of the potions Professor's assistants (PAs). You can find a list on the class page on HiH.

Before we get into a discussion of potions, I want to begin with an administrative overview of Potions. This will cover Lesson One through to the end of the course.

COURSE READING

All of the information you need for this class will be available within the lessons. You do not need to read the book *Magical Drafts and Potions* in the library, but if you get the chance, it is highly recommended, as it provides a good overview of the history of potions around the world, as well as potions ingredients, techniques, and instruments. Please

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make sure you keep your notes cumulative course, so you will be throughout the years.

It's my strong anyone who wishes to pursue also pay close attention in of Magical Creatures we get our ingredients

There will occasionally you to do a bit of the information, but assignments, or they requirements. outside research of the course. supplementary materials that will provide additional the upper years. You can find these listed in each year's lessons and content.

from previous years on-hand as well, as this is a expected to recall important concepts



recommendation that a career in potion making your Herbology and Care classes, as these are where from.

be assignments that require outside research to obtain all of these will either be extra credit will not be too rigorous in their Required assignments that call for will not begin until the third year Additionally, there may be in the library that I will add over time information, particularly as you reach publications in the library and will be

ASSIGNMENTS

For the first two years of the course, the only mandatory assignments you will have are quizzes. These assessments include a mix of multiple choice, true-false, and short answer questions that seek to test your knowledge of the material. Almost every lesson will also have an extra credit essay option that seeks to expand on students' practical knowledge of potions. These essays will often be creative in nature, and they will ask you to apply the knowledge you received in class, often in a "real world" setting. Multiple submission options are always acceptable, and a short story, painting, video, song, or other creative assignment is always welcome in place of an essay. I invite all to use whichever method best suits his or her learning style best.

Beginning in the second year, there will be an optional "Potioneer's Log" assignment that invites you to write at least 1,000 words each year on your overall experience and reflect on your learning. This is in no way mandatory, but is a very valuable experience and is highly recommended for anyone considering a career in potions. Beginning in the Third Year is another optional assignment, a thesis in which students can research any aspect of potions that interests them.

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GRADING

For all essay and non-quiz assignments, I will present a rubric as well as bullet points illustrating every point that should be included in the assignment, regardless of the submission style. Professor's assistants (PAs) are instructed to weigh each bullet point in their grading, and they will also provide an account of exactly what credit may have been lost on an assignment. If you ever receive an assignment that does not have any feedback with lost points, please consult with the professor or a Head Student.

I would also like to make it clear that you will never lose credit for original content or disagreement with course material, as long as it is presented respectfully and with proper defense. I welcome intelligent considerations of fact to present new hypotheses. This may be more relevant in later years, but still holds true in these early classes.

* **LEARNING DISABILITY, NON-NATIVE ENGLISH SPEAKER, PHYSICAL DISABILITY**

If you have a learning disability, are a non-native English speaker, or have a physical disability that requires you to use speech-to-text programs or similar software, please feel welcome (though not required) to put the following designation on your assignments in order to be exempt from spelling and grammar requirements:

LD = Learning Disability

NES = Non-Native English Speaker

PD = Physical Disability

This is a relatively site-wide allowance, so as long as other courses state they comply by the same rules you will be using this designation for all of your Hogwarts assignments. If you do not include these designations, you will be graded and discounted for improper spelling and grammar. This is an honor code system that trusts that students will not misuse these abbreviations.

PLAGIARISM

Plagiarism will not be tolerated at all in this class. The PAs and I both use plagiarism checkers, and the policy when it comes to plagiarized work, whether it is from the Internet, the lessons, or other students is an automatic 1%. If you include a quote in your essay, that is all right, but cited content should not be more than 5% of your submission, and should include a proper citation.

LESSON SCHEDULE

The following is what you can expect in terms of content for Year One of Potions:

- Week 1 - Introduction; Administration; Classroom Safety
- Week 2 - An Introduction to Vocabulary and Basic Theory
- Week 3 - "Tools of the Trade;" Brewing Basics
- Week 4 - Lab #1: Cure for Boils
- Week 5 - Transitions Revisited; Midterm
- Week 6 - A Look at Dragons
- Week 7 - Ingredients: Magical, Mundane, and Transitional
- Week 8 - Lab #2: Forgetfulness Potion
- Week 9 - A Look at Year Two; Final

The following are the yearly topics assigned to Potions class, to give you an idea of where we are, and where we are going:

- Year 1 - Foundations of Potions
- Year 2 - Simple Theoretical Background
- Year 3 - Healing Potions
- Year 4 - Physical Modifier Potions
- Year 5 - Psychological Potions
- Year 6 - Offensive and Defensive Potions
- Year 7 - Exploring Experimentation

WITH THE LIGHTS OUT, ITS LESS DANGEROUS

With this basic administrative detail completed, I would also like to cover some basic classroom and lab safety. While I am rather flexible when it comes to theory and expression of individuality, I do not afford any leniency when it comes to safety both in and out of class. Many of the ingredients we use in class are highly toxic or irritating when one comes in contact with them, and a simple accident can result in severe damage or even death. As such, misuse of classroom instruments or inability to heed basic safety will result in expulsion from the classroom or more serious repercussions.

In terms of dress code, please remember to wear sufficient covering and closed-toed shoes. Bare skin is particularly prone to exposure through spills and splashes. Also, please do not wear overly bulky garments, as they can snag on instruments and impede movement. They may also

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dip into the cauldron and contaminate the potion while you are brewing. Students should remove any long- hanging jewelry and pin hair back if it is long to ensure it does not catch or fall into the cauldron. Jewelry as a whole is discouraged for this reason, will certainly during labs. Remember to wear dragon-hide gloves as necessary, and always wear your goggles while working with potions.



Patience is also your friend when it comes to new potion recipes. In any lesson where we are working with actual ingredients or potions, please wait until you have received all of your instructions before touching anything. While you may be eager to get started or may have read ahead in the textbook, it is important to wait until I give you permission to begin brewing, especially in your first few years in the classroom. While I know many may have read the textbook, which is rather thoroughly and eloquently written, there may be additional safety tips or guidelines I wish to impart that relate to the specific potion we are brewing.

In terms of behavior, while I realize that it's natural to revert to pranks and humor in times of stress, the potions classroom and lab is not the place to do this. While I certainly appreciate a good joke or a prank, when dealing with chemicals and potions, such behavior can lead to severe physical pain and will not be tolerated.

In any event, the most important thing to remember in the event of an accident is not to panic. Take precautions to ensure your own safety first, and then come find me. I keep many simple medicinal potions in my potions cabinet, and I am happy to escort you to the Hospital Wing should you sustain any more serious injury.

Additionally, if you see a fellow student sustain an injury, do not immediately run to help them. I know you all have the best intentions in mind, but it is best if you stand away from any potential danger. Getting involved will only complicate matters and may cause you to get injured as well. If I have not seen the problem, please notify me immediately, providing any details you can about the incident. If the results of any accident upset you or make you queasy, please do feel free to excuse yourself from the classroom. Everyone has their triggers, and I am particularly sensitive to those who take care to respect them.

Finally, you will hear this a good deal from Professor Virneburg's Charms class, but please be particularly careful with your wands. Wands are crucial tools when stirring potions, but giving students license to use their wands is not an open invitation to any horseplay or to practice new spells or jinxes on one another. Also, please never point your wand directly at yourself or at anyone else during Potions.

HERE WE ARE NOW

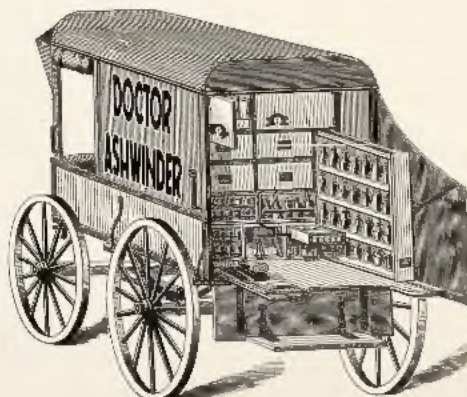
Moving into the bulk of the lesson, a potion is defined as a magical mixture that combines both magical and mundane ingredients. Today potions are brewed over a fire or another thermal energy (heat) source in a cauldron. The term “potion” is rather generic, as it represents any magical combination of ingredients that has been brewed to achieve a certain effect. These effects vary drastically, however, from aiding headaches to increasing energy, causing a part of the body to swell, changing eye color or appearance, and even providing strong psychological or poisoning effects. One can even achieve peaceful sleep or emulate true death with a potion. The difficulty in brewing a potion is equally varied, and while some potions can take only twenty minutes to brew, others can take more than twenty-four hours in total. (I say from experience those are, without exaggeration, the worst).

It is important to note that only a witch or wizard should ever ingest or apply a potion, regardless of the circumstances. Muggle exposure to potions causes unusual and often deadly reactions. Before the International Statute of Wizarding Secrecy of 1689, certain magical and non-magical communities lived in close proximity and in some cases, magical people even held places of high esteem. Some civilizations even deemed magical beings to be descended from gods.

At that time, there is evidence that Muggles may have been slightly more tolerant of potions and elixirs. Ancient Muggle and wizard accounts recount cases of shamans and priests creating love potions and similar products for Muggles to use. These potions may have been real “love potions” in some form, or it is possible that they used mundane ingredients that replicated the psychological and chemical effects of magical love potions. Many scholars still debate today whether true magical potions were dispensed prior to the enactment of the Statute.

Unfortunately, most ancient civilizations did not provide definite accountings of the ingredients and magic used in many potions, particularly those given to Muggles. This is perhaps unsurprising, as the Muggles would have been none too pleased if they knew that they were being treated any differently from others in the community.

Subsequent to the Statute of Secrecy, many Muggles continued to take advantage of the popularity of potions, and some sold fraudulent liquid remedies to other Muggles at high prices for their “magical powers”. Some of these potions included vitamin-rich minerals and elements that did boost memory and cognition, while others included ineffective and occasionally harmful ingredients that may have even exacerbated the symptoms they sought to cure. The term “snake



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oil salesman” still applies to those Muggles who sell goods with false information about their effectiveness, particularly “Cure-All” liquid remedies of no use. This term should, of course, not be confused with a salesman that sells truly useful portions of snakes to use in potions within the magical community.

The long separation from magic has caused what little tolerance Muggles had to potions to fade. The human body tends to work in this fashion: it adapts to things it experiences regularly, while growing intolerant to things it has not experienced ever in its lifetime or in quite a few generations. Some think that certain allergies in both magical and non-magical people may be related to this in some fashion.

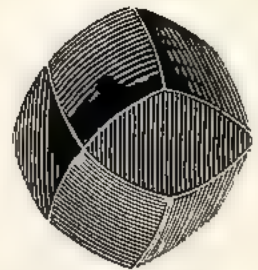
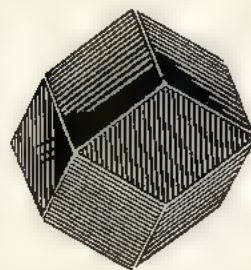
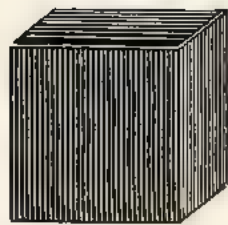
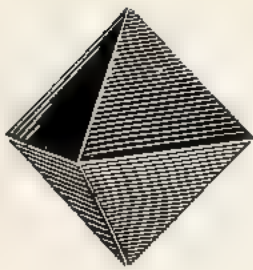
To use another mundane example of how this process works, consider our consumption of lactose, or the predominant sugar in raw milk. This is an example of how the same process can work in reverse, allowing a species to become more tolerant of a substance with frequent exposure. In the time of the ancient Egyptians, humans did not have a tolerance for lactose. They almost never consumed it beyond the age of seven or eight, and therefore human digestive systems were unable to process it. However, today 35% of the world population is said to be able to properly digest lactose. The precise reason for this change is yet unknown, but some surmise it may have to do with increased regularity of consumption causing human digestion to evolve gradually.

In contrast, prolonged lack of exposure to magic may have ultimately made Muggles less about to handle it when in direct contact. For example, a Squib or other being with immediate magical ancestry may show more tolerance when they accidentally consume potions or find themselves exposed to charms. However, this lack of ability to produce magical energy themselves may prove it exceedingly harmful or fatal still, so extreme caution should be observed.

And now that we have completed our first lesson, I invite you to take the first quiz of the year. There is also an optional introductory essay, should you decide to stretch your creative muscles. Thank you, and I look forward to a fantastic year with all of you!

Prof. von Graft

LESSON 2: SOME VOCABULARY & THEORY



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WHERE ARE WE?

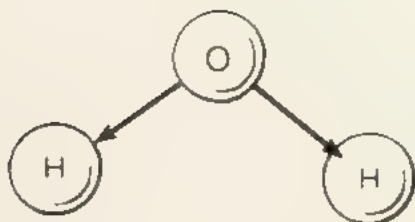
Welcome everyone to the second week of Potions 101! I have enjoyed reading all of your introduction essays and I am overjoyed that so many of you are aspiring to be exceptional potionneers. I know that you are all anxious to brew your first potion, but I want you to be familiar with the fundamentals before setting you before the cauldron. This week, we will cover some simple chemical concepts and vocabulary, and next week we will discuss tools used in potion making and brewing methodology. Then you will finally be invited to brew the Cure for Boils in week four! I promise that we will not delve too deeply into the theoretical this year, but I do want you to have some simple background on what happens when your potions are brewing.

WHAT YOU SAY?

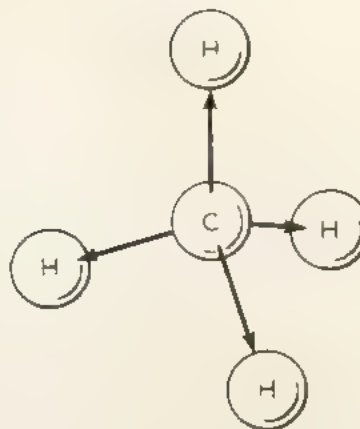
As we discussed in the last lesson, a potion is a magical mixture composed of magical, mundane, and transitional ingredients. We will cover what a “transitional ingredient” is later in this course. Individually, each of these ingredients have their own effects that either help or hinder the human body. However, when we place these ingredients in a cauldron and add both thermal and magical energy, it prompts those ingredients to restructure themselves, to state it simply, and to form new chemicals and compounds.

So let us delve into some of the terms defined above. A mixture is when there are multiple substances which are mixed together with no reaction taking place. To speak technically, this means that the molecules have not changed in character, and all of the materials involved in the mixture coexist with one another.

A mixture can either be considered heterogeneous or homogeneous. A mixture is considered heterogeneous when there is not one uniform substance throughout, but rather many different components combined together. You can pull apart and identify each of the materials in a



WATER
H₂O



METHANE
CH₄

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mixture. A simple mundane example of this would be trail mix: while one purchases trail mix in one canister, it can be pulled apart and separated. If you only wish to consume peanuts, you can pick them out of this mixture; if you hate raisins, you can simply pick those out of the container. A mixture is considered homogeneous when you cannot visibly see the parts of the mixture but they are still able to be pulled apart without a chemical change. For instance, a salt water solution would be considered a homogeneous mixture. It appears to be one thing, but if you boil the water and evaporate it out, you'll be left with the salt in the cauldron!

In contrast, a compound is a substance that occurs as a result of a chemical reaction of some sort between different substances. A compound can only be separated once again into its individual parts through another chemical reaction. For example, take the compound known as water. You will not have to know the chemical equation for this compound until the latter half of Potions 201, but for the sake of an example, you cannot separate out the individual substances that create water. However, you will learn that water is composed of a uniform collection of molecules consisting of the substances hydrogen and oxygen.

A pure compound is known as a homogeneous substance, or rather it has only one discernible ingredient throughout. To continue with the example of water, if you have a bucket of water, you can scoop out a cup, a liter, even a tablespoon of water. However, you cannot simply pull oxygen or hydrogen out of that bucket without a chemical reaction taking place; instead, you can only remove water.

Now, I often say that a potion is a mixture of compounds. This sounds confusing, but is really quite simple. Consider you're making a red wine vinaigrette with oil, red wine vinegar, garlic, and a touch of mustard. These are all ingredients that are composed of different compounds themselves. You add all of these separate entities to a bottle and shake them up very well. All of them appear to mix into a single substance. However, there has been no change, and that dressing is still composed of these different ingredients: oil, vinegar, mustard, and garlic. You may even see the chunks of garlic and clumps of mustard floating in the dressing.

However, the individual parts of this Leave your salad dressing (after using a bit then come back and look at the mixture. separated, heavier parts floating to the salad again, you will have to shake it that they are make the nice, uniform, don't separate quite as obviously, but they are a mixture of separate ribbon of gold running through a teal compounds. There may even be small mixed in one uniform-seeming color.



dressing can still be separated again. on your salad, of course!) for a day or so, The different parts will likely have bottom. If you wish to use it on your once more, mixing the ingredients so tangy salad topping. Potions typically you can still often see evidence that compounds. Say, for example, you see a potion. This likely indicates differing elements of two or more compounds

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This brings us to the topic of a solution, which is a type of a mixture. A solution is when there is a smaller amount of a substance, known as the solute, spreads throughout a greater quantity of another substance, known as the solvent. The solute (or solutes) does not have to be interspersed evenly throughout the solvent, but it does have to be there in some amount. One example of this is salt water. If you add a tablespoon of salt to a 350 ml (about 12 oz) cup of water, then stir it well, you will find yourself with a salt water solution. The salt -- the solute -- is spread throughout the water, the solvent. However, one can still distinguish the separate elements of saltwater: the salt crystals may even still crunch a bit if you bite down after a sip of the water.

Transition Name	Initial Phase	Final Phase
Melting	Solid	Liquid
Sublimation	Solid	Gas
Freezing	Liquid	Solid
Evaporation/Bolling	Liquid	Gas
Deposition	Gas	Solid
Condensation	Gas	Liquid

Another good example of a solution is our atmosphere, which is composed of many chemicals and elements. Our atmosphere also shows that solutions do not only have to be liquids- they can be gases as well. This leads us into our next discussion of phases and phase transitions. This is something with which you should already be familiar from your daily life, even if you don't know the name for the phenomena.

I will not go into detail on the mundane physics, but to boil it down, so to speak: solids, liquids, and gases are composed of basic units known as atoms and molecules (groupings of two or more atoms). If these particles are packed closely together and moving slowly, this is a solid. If they are packed less closely and experience slightly more dynamic (changing or active) movement, we see it as a liquid. You can move your hand through liquid because the particles are less closely-packed together. Gases have the least densely-packed particles of the three, and those particles have very active movement. The molecules and atoms are so loosely packed that you typically cannot see them. There is one more substance often called the fourth state of matter, known as plasma. Simply concentrate on the first three phases for the class and you will be adequately prepared to pass any examinations.

A phase transition is the term for when one of these phases passes through to another. This happens through a shift in energy, typically shown through a gain or loss of heat, which is the tangible evidence of thermal energy. For example, if you put an ice cube on a hot stove, you will see it melt and transition to water quite rapidly. In cases of extreme heat, you may even

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occasionally see it sublime, which is when the change in energy is so drastic, a solid transitions directly to a gas. Now this may be counter-intuitive for some, as I know that when I'm overheated, the last thing I want to do is move rapidly. However, if you think of heat as an expression of energy, the hotter something is, the more energy it is producing.

You are free to science of other physics on your will always encourage research for enjoyment.

this discussion, we will - or lack of heat - as how changes the activity of particles and causes substances to transition between phases. Be advised that there are other ways this energy can be created, however, including magic.



How does this relate to potions? Well, many ingredients maintain their solid form, but are simply dissolved into such small pieces that they cannot be individually distinguished within the potion. However, whenever you see the gentle billow of steam rising, this is indicating some sort of gaseous phase transition. Both the heat of your cauldron and the magic from your wand cause the change in energy that provides the catalyst for this reaction. The magic from your wand also leads to more complex chemical reactions, but we'll cover that more later.

You will likely know most of these terms already, but here are the most common types of phase transitions:

THE DUST HAS ONLY JUST BEGUN TO FALL (THE BRIEFEST OF LOOKS AT THEORY)

If you are like me, when you see something you don't quite understand operating, your first thought is "How does that work?" My next is usually "What happens if I poke it just a little bit?" I advise you don't ask the second question until you have just a little more

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understanding of potions and the theory behind mixing ingredients. However, you may still be asking yourself what makes a potion work.

Well, the different components combining do not simply react on their own. If you threw the ingredients for the Cure for Boils - which you will brew in a lab later this year - into an empty cauldron and just left it sitting there, it would be no closer to forming a Cure for Boils than when the ingredients were sitting separately. In later years, we will discuss certain combinations of ingredients that were once used without a brewing process, but these were not true potions. Instead, they were combinations of ingredients, each of which achieved a certain related effect. However, in brewing true potions, it requires the energy of heat as well as the magic in your wand in order to initiate a reaction in the ingredients. The order you add the ingredients becomes important, because it enables certain ingredients to react in a specific way as the potion is brewed. This reaction causes the bonds of molecules, as mentioned briefly above, to create something brand new. If this sounds confusing, we will cover the science of this later, so fear not!

Truthfully, a good deal of information about potions theory and how ingredients interact with magic is still a mystery. You may never become a researcher or have interest in advanced theories of potions, but in this class, I hope to at least instill the importance of understanding the fundamental theory behind something: with this understanding, we are able to manipulate, innovate, and make new and exciting discoveries. In the past, magical technology has often stagnated because more conservative minds were content with continuing to use tried and true methodology without thinking to investigate how it worked, and what other potential it held for magical innovation and advancement. The tide is slowly turning, but there is still a good deal of pushback against what is deemed an “odd” and occasionally “laughable” group of researchers.

And with that, I will leave you for today. Good luck on your quiz and, if you choose to do it, your extra credit essay! I will see you next week when we discuss potions equipment and technique.

LESSON 3: TOOLS AND BREWING



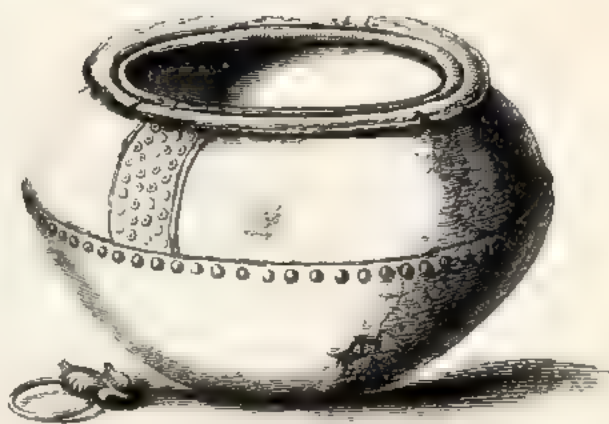
IT'S A KIND OF MAGIC

Hello everyone and welcome to our third lesson of the year! As I'm sure you have noticed even this early on in your Hogwarts career, we don't all come from the same backgrounds. In my case, I grew up on a farm with a magical family. Some of us grew up in cities, suburbs, or small towns, with magical families or non-magical families. Some of you may have some background in potions, while for others all the information you have learned thus far is incredibly new. But we are all here right now, together. For those of you who have watched your parents or family members brew in the home the first couple lessons will be a bit repetitive, but nonetheless important. It will be your first time putting these instruments to work on your own! As you know, next week will be your first lab, and as such it's also crucial to teach all of you who may not have been exposed to potions regularly in your childhood the tools and tricks of the trade, so to speak.

Brewing potions is a sensitive and difficult enough endeavor even if you do pay attention to easily controlled variables, so there is no excuse for letting those variables go unheeded. Creating a potion can also be a very dangerous process that, if done incorrectly, can lead to painful injury and, in some cases, death. As such, both proper procedure and proper safety - some of which we learned in our first lesson - are some of the biggest things I want you to take away from this foundational year of Potions. However, do not fear: I promise I will be fair, if slightly tight-lipped, next lesson during our lab.

ONE SHAFT OF LIGHT THAT SHOWS THE WAY (TOOLS OF THE TRADE)

The most iconic tool used by the potioneer is the cauldron. Potioneers often have strong emotional ties to the cauldrons they use most frequently, and you will even occasionally see them mumbling to their cauldron during the brewing process, urging the instrument along. Now before you mock this, imagine you are studying advanced potions techniques following your graduation from Hogwarts. You've been awake going on fifty hours straight confirming the alignment of the planets and other celestial bodies, gathering ingredients at precisely the correct moment, crushing or chopping any as needed, and then brewing an incredibly intricate potion



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of some sort with several phases and long wait periods between. You are alone in your lab standing over your cauldron, this one vessel that holds the potential success of such a long and hard effort. If finished correctly and if you took sufficient notes, this could mean your first published scholarly article or even a potential first patent. The potion in that pot simmers merrily, letting off gentle steam and occasionally emitting sparks. This vessel, the cauldron, is gently cradling and preparing the key to your potential success. Finally, you reach the end of that long road. Your potion is done and ready to be bottled. It is successful - you are successful. And you only have that gently hissing cauldron with which to share that quiet victory.

Cauldrons are made of various materials and come in many sizes. In different parts of the world, different materials are favored, typically in affiliation with whatever materials are most prevalent in that country. That is being standardized somewhat now, however, through better trade agreements and open commerce between magical communities. In terms of size, some cauldrons can be small enough to fit in the palm of your hand and brew only the smallest servings of potions, while there are others that would comfortably fit a rather large human. These large cauldrons are typically used for commercial brewing, and are rarely seen in personal households. Although most European and American countries use standardized numbering systems for conveying cauldron size, there is variation internationally. As such, make sure you research local sizing systems should you find yourself shopping in a remote location.

There are three common materials used for cauldrons in Great Britain:

Pewter is the best for beginning potions work, as it is the slowest and least expensive standard cauldron, so most young witches and wizards are able to obtain their own. It gives a little bit of leeway owing to its slow brewing time, but students should still be careful to be as precise as possible in their measurements and timing, even with this extra wiggle room available. Pewter is a metal alloy (a material composed of at least two metals) that is traditionally at least 85% tin with copper, bismuth, antimony, and occasionally lead making up the rest of its composition. The earliest pewter found dates back to 1450 BCE in an ancient Egyptian tomb. All Hogwarts students should have a Size Two Pewter cauldron for their Potions class.

Brass brews potions at a medium level speed, and is slightly more expensive than pewter. This is a good cauldron for intermediate witches and wizards who have a decent grasp of brewing times and methodology. Although this is not always exactly the case, potions brewed with brass tend to brew approximately 10% faster than those brewed with pewter. Brass is also a metal alloy composed mostly of the metals zinc and copper. The levels of each of these metals can vary to create different effects in the metal. Alloys of copper and zinc have been found in the western portions of Asia and the East Mediterranean dating as far back as the third millennium before the Common Era. Similar alloys were used throughout ancient times, gradually making its way west to the Roman Empire and other parts of Europe.

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Copper is the fastest brewing cauldron material, and as a rule of thumb, tends to brew potions approximately 10% faster than brass cauldrons. Only a skilled witch or wizard should use a copper cauldron, as they can be a bit tricky owing to the much more rapid brew time. The faster brew time also makes it more likely to make a mistake or ruin the potion: a shorter brew time also yields less “wiggle room” for differences in timing. It is also unwise to use these cauldrons for potions with the longest brew times, as quite often a good deal of the strength of these slow-brewing potions is gained by a longer period of the ingredients sitting and brewing with one another. Copper is not an alloy, but rather a pure chemical element containing atoms of all one type. We will cover more of that in Year Two, so don't worry if you don't understand that now! There is evidence that copper was used as far back as nine to ten thousand years ago, and the Chalcolithic Period, commonly known as the Copper Age, marks a period of time when this metal was in popular use before the discovery of the alloy bronze, which is a harder metal.



On occasion, other materials are used for cauldrons in Great Britain, but these materials tend to be a bit rarer and a good deal more expensive. Gold and silver cauldrons are two such examples of this. Silver cauldrons are actually among the best to use, with the least likelihood of brewing failure as well as a smooth, easy brew time. The effects of potions brewed in silver, particularly in conjunction with certain phases of the Moon, tend to be heightened, and they quite often have a longer shelf life. I expressed an interest in obtaining a silver cauldron when I first arrived at Hogwarts, and within a short time, a few generous souls gifted me one! It was actually one of the most touching moments of my career, not just as a professor, but in the course of my professional life. Finally, the fire crab also makes a wonderful cauldron, but owing to their frequent poaching for their shells as well as the gems found on their shells, international wizarding laws have created sanctions protecting colonies in the Fiji Islands. However, they are still traded with some frequency on the black market. Being caught with a fire crab shell sold on the black market has hefty fines, however, and carries with it possible time in Azkaban prison.

As mentioned in the safety procedures, you must always bring your dragon-hide gloves to class in order to protect you when handling dangerous ingredients, goggles to protect your eyes from splashes and sprays, and your wand. Remember, some ingredients are not only caustic, they may also try to bite: keep alert at all times, and never grow lackadaisical when brewing or preparing ingredients.

Other important implements you will find at your brewing station at the lab next week include a set of scales to measure your ingredients as well as measuring cups for liquids and a ruler for solids that must be added by measuring length. You will also want a sharp knife to ensure you are cutting ingredients cleanly and a cutting board. Many prefer a silver knife for this, as it

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tends to cut magical ingredients the most cleanly, but it's up to you. Some ingredients must be crushed to a fine and even dust or ground into a smooth paste with a mortar and pestle. Stirring during the brewing process should actually be done with your wand (never stick your wand into the potion, though!) but you may have a wooden stirring utensil of some sort as well. This wooden spoon or other implement is often used to stir the potion after the brew time is finished to ensure an even consistency or to add Flobberworm mucus for texture.

Please make sure that you always have cauldron cleaner, and that you always clean your cauldron thoroughly after you finish bottling your potion. If you don't remember to clean your cauldron, or if you do so sloppily, any remnants of your old brews will interact with anything new that you try to brew. As you will learn when you start seeing different potions' interactions with one another, this could have some pretty harrowing and unpleasant outcomes. It is also important to clean all of your implements between use, as even individual ingredients can react poorly to one another and taint your brew.

Remember, a well-ordered station is an efficient one. Try to sort your ingredients in order of usage and lay out your implements in a sensible, orderly manner. This saves you the trouble of groping around just to find the scales buried under haphazard bags of nettles as your potion slowly turns mustard yellow and then melts the bottom of your cauldron.

THE FLAME THAT BURNS (BREWING PROCESSES)

While the casting of charms and other spells requires a tremendous grasp of willpower and concentration, as well as precise wand movements and incantations, the art of brewing potions requires another level of patience and precision. Potioneers often find themselves balancing the volatile nature of magical ingredients with very specific brewing times and methodology. It is very important to follow directions when brewing a potion in a non-research based scenario. Inexperienced potioneers in particular can cause some rather nasty effects on themselves and others if they don't take proper precautions.

Firstly, it is a good idea to prep ingredients in advance, at least to the extent that you can. If certain ingredients can be measured out, chopped, ground, or similarly prepared in advance, this takes some of the pressure off of you when brewing. However, many ingredients must be freshly cut, juiced, ground, or measured in order



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to be properly effective. Also, some ingredients can only display their full capabilities during certain moon phases or other celestial alignments. This is something we will discuss in further detail at a later time. For the purpose of our labs now, all of your ingredients will be provided for you at the beginning of the lab. They will all be properly aged, and, at least in the beginning, there will not be too many tricky processes.

Self-heating cauldrons do exist, and while many technological advances in the magical world seem a bit overdone, if you can get your hands on a self-heating cauldron for simple daily brewing, it may be worth the investment. It may sound lazy, but those cauldrons are engineered to hold steady temperature throughout the interior, and it really does make a small difference when compared to adjusting and readjusting your cauldron over a fickle flame. I personally prefer an actual flame, since I'm wary of adding additional magical energy to my potions, but that should really only impact more complex and difficult potions.

Once you have all of your ingredients, your plan of attack, and your cauldron heated, it's time to start adding your ingredients. Many recipe books will walk you through step by step, and it is integral that you make sure that you follow their instructions exactly. Ingredients must always be added in the correct order. This is very important, as the magical and thermal energies that precipitate the brewing cause certain ingredients to react with one another at certain times. If you add ingredients out of order, then these reactions cannot happen and your potion will not brew properly. More complicated and portable household potions books may not have specific instructions listed, but instead simply list ingredients in the order they are added. These texts assume that the witch or wizard is familiar with the general recipe, and simply need the list of ingredients to trigger memory.

Another important component is stirring with your wand. As I mentioned previously, do not stick your wand into the potion! As much protective magic as your wand holds, that is never, ever a good idea, and your wand wood will not thank you for it! Hold your wand over the cauldron, say the incantation, and move your wand in slow, steady circles. We'll discuss this more next lesson. That said, stirring the potion in the correct direction, either counterclockwise or clockwise is very important. Also, please ensure that you stir the correct number of times at the proper time. All of this is integral, as the interaction between your wand's magic and the magical and mundane ingredients must happen at the correct time in order to produce the desired chemical and magical reactions. Stirring too little will not excite the particles enough for the reaction to occur. Stirring too much will over-excite the particles, and could cause an extreme reaction.

Potion brew time is the total amount of time it takes to brew a potion. We measure the active time you spend brewing your potion as Estimated Brew Time (EBT), although depending on the cauldron, brew times may vary slightly. Extended brew times are one of the reasons many are deterred from potions and incorrectly view it as difficult and time-consuming. While your potion may take a total of three (or even thirteen!) hours to brew, for example, you may only be

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actively involved for an hour of that process. Nonetheless, you cannot simply wander away from your cauldron, as you have to ensure nothing is going awry in the process. It is wise to bring a little busy work that you can do while keeping an eye on the potion. Many witches or wizards knit, sketch, read the newspaper, or perform similar activities while their potions are brewing. Those who brew their own potions typically make the brewing area inviting and comfortable with pictures of family, friends, and loved ones so that it's a comfortable lab or "closet".



So, skipping ahead in sequence, you followed all of the instructions, and your potion is brewed correctly! Now you need a means to store it. Currently, the most common storing mechanisms used for potions storage are glass or crystal phials. These phials can either be completely clear or slightly tinted for potions that may require storage in dark or dim areas for maximum efficiency. The potion can either be poured through a funnel into the phial, or a Siphoning Charm can be used to transport it from a larger cauldron to be stored.

Many potions can be used immediately after brewing. However, some require time for the ingredients to mature and for certain chemical and magical processes to "settle", for lack of a better word. Additional magical reactions may have to occur. Most texts will list this maturity as the Total Brew Time (TBT), so be mindful of that as well. As well as the TBT, most detailed recipe books will also indicate how long a potion can be stored before it should be safely discarded. It is important to consult the expiration date before using a potion.

Always label your phials clearly with the name of the potion, effect, ingredients, date brewed, expiration date, usage, and any warnings about allergies or side effects. Having all of this information is crucial to ensuring you do not confuse potions or expiration dates, or that if any emergency prompts someone to have to access your potions cabinet, they can find the proper

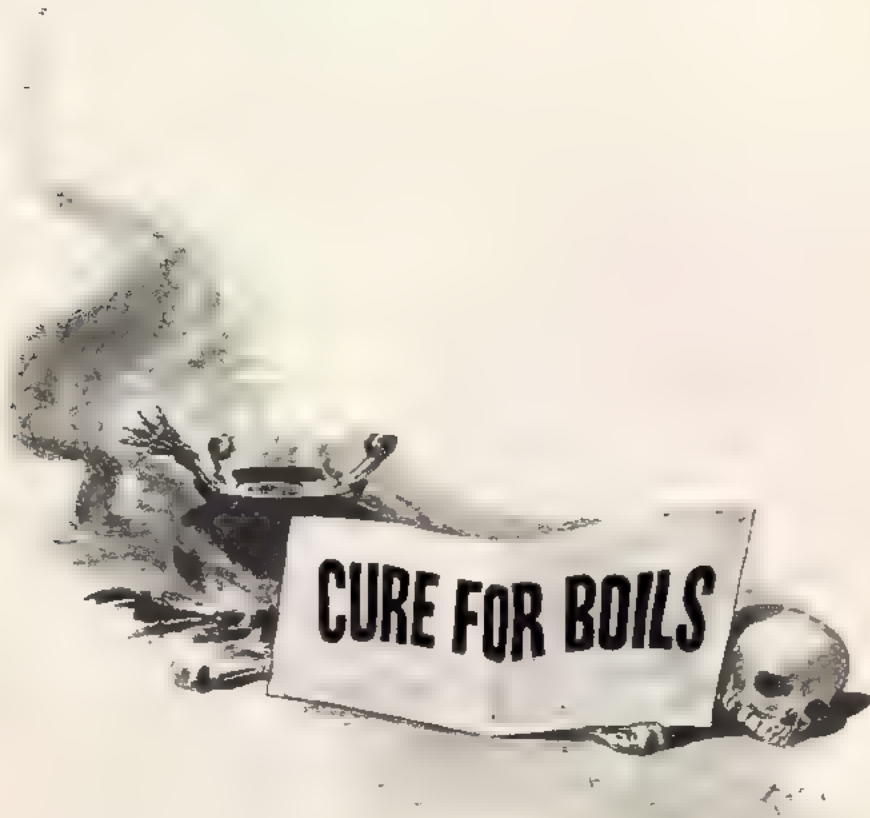
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potion immediately. If you keep certain potions on-hand for specific allergies or to treat chronic diseases, it's wise to keep those very clearly labeled or marked for easy access.

Once you have reached this stage, you are ready to choose the appropriate place to store your potion for future use. There is some methodology to this as well, and I will explain and demonstrate how to properly store your potion following next week's lab. With this, I will let you go and prepare yourself for next week, when you will be doing your first lab, the Cure for Boils! Good luck, and have fun with your quiz and extra credit essay, if you choose to complete it.

LESSON 4

LAB #1: CURE FOR BOILS



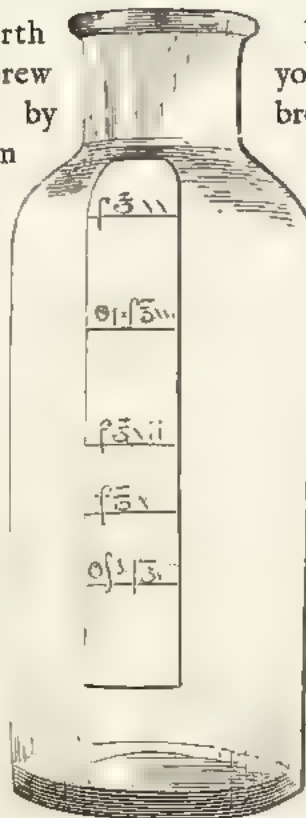
THE REMEDY IS THE EXPERIENCE

Welcome to the fourth you're excited to brew will be starting off by potions we produce in class, from but some are more glamorous than so-glamorous potions. But, it is generate, which is why it is so some nasty complications if it is see, but otherwise it is a mostly difficult to get too wrong. just right, as long as the heeded, you will be able to use boils effectively. It's a wonderful and can be quite a useful potion to

For those who are unaware of located in a gland or a hair somewhat like painful and untreated, not only are they very spread and cause additional - and untreated, boils have even been throbbing, painful golf ball. Muggles typically deal with this infection by soaking the boil in hot water for several days, as well as repeated application of hot compresses. Eventually, the boil bursts and the pus drains away (very appealing, I know), at which point the drained site of the boil is treated with medicine and dressed.

The process of the Cure for Boils is not terribly different from the Muggle method of dealing with the boil. However, it does occur in a much quicker fashion. The potion is applied topically (that is, to the surface) of the affected area, which draws the boil to a "head" in mere minutes. The boil will then pop -- sometimes quite dramatically, so be warned, -- and will then drain completely. Much like Muggle treatment for boils, after the boil has been popped and drained, it is important to clean the site and apply essence of dittany or another healing potion or herb. It should also be covered and allowed to heal naturally and with the help of normal healing potions and elixirs.

You will note that all of the directions for the Cure for Boils are written on the board in front. Sometimes my handwriting can be a bit difficult to read so I have left a legible copy at each brewing station for you to reference. I will be brewing this potion with you in order to illustrate



lesson of Potions 101! I hope that your first in-class potion today. We brewing the Cure for Boils. All the first year and beyond, are important, others. This is one of those not-one of the simpler concoctions to good to start with! There can be brewed incorrectly, as you will innocuous potion that is very Typically, even if it is not brewed instructions are more or less this potion to help burst your place to start for my First Years have in your potions cabinet.

what a boil is, it is an infection follicle. These boils may appear inflamed infected pimples. If painful, but the infection can more dangerous - problems. If left known to grow to the size of a

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proper procedure and methodology. While the potion is brewing, I will wander around and help you should you fall behind or need a bit of additional assistance. Please do not hesitate to ask questions about the process as we brew as well! I promise I am quite good at multitasking, and it will not throw off my own brewing here in the front of the room.

Please notice that I have listed temperatures in Kelvin, Celsius, and Fahrenheit. Please feel free to take heed of whichever method of measurement makes the most sense to you. For those who have never heard of Kelvin before, it is a unit of measurement for temperature. It is part of the International System of Units (abbreviated as SI from the French *Le Système International d'Unités*), and it measures thermodynamic temperature. It is not, in fact, named after a man named Kelvin, but rather after William Thomson, who was the First Baron Kelvin. He wrote a paper in 1848 that called upon the need for an absolute thermometric scale. This may, in fact, make little to no sense to you, but do not worry: you do not have to understand it yet! I just wanted to give a little bit of backstory.

As an additional safety note, please wear your goggles at all times in the lab. However, if something should happen, you will notice that I also have an eye-rinsing station at the front of the room. There is a bottle of Ephesial's Eye-Saving Rinse as well as other medicinal and first aid potions. If the potion makes contact with your eyes at any point during this brewing process, we will certainly rinse your eyes, but it will also require a trip to the infirmary.

One last bit of housekeeping information is, of course, the Stirring Charm. As I've mentioned more than once already, you should never, ever dip your wand into the potion in order to stir it. There is a very simple charm that you will almost certainly be able to perform to allow for this stirring, however. When moving your wand either clockwise or counter-clockwise, as you begin to move your wand in smooth, even circles across the top of the surface, say the phrase "Halato" (hah-LAH-toh). You will see the potion move and churn in the direction you are moving your wand and, in some cases, you may see a very pale beam of light between your wand and the



cauldron. When stirring, continue to move your wand in the number of times listed in the recipe. When you stop and lift your wand, the charm will cease. You will have to remember to say the charm every single time you stir. If in these first few brewing exercises, you occasionally find yourself waving your wand around the top of your cauldron without it doing anything, do not worry! We all forget to say the incantation on occasion.

CURE FOR BOILS

Ingredients:

750 ml of water
6 snake fangs
4 horned slugs
2 porcupine quills
3 measures Flobberworm mucus

Estimated Brewing Time (EBT):

Pewter cauldron: 45 minutes
Brass cauldron: 39 minutes
Copper cauldron: 33 minutes

Instructions:

Part One:

Add 750 ml of water to your cauldron and bring the temperature to 363 Kelvin (90°C/194°F).

Add all six snake fangs to your mortar and crush them into a fine and even consistency using your pestle.

Take the tablespoon you see beside your mortar and add four measures of the fangs to your cauldron.

Heat your cauldron to 383 Kelvin (110°C/230°F) for ten seconds, then turn down the flame to 363 Kelvin (90°C/194°F). Please be careful not to ignite your instruction sheet, each other, or anything else in the classroom while adjusting the temperature up and down.

Wave your wand once clockwise. At this point your potion should have a pink hue.

Depending on your cauldron, your brew times will vary. For the purpose of today's lesson, you can leave your pewter cauldron brewing for 22 minutes. Throughout much of this potions' brewing, you will notice that, even as the color of the potion changes, the smoke remains pinkish in hue. (If you were using a brass cauldron, the brew time would be approximately 19 minutes. Copper cauldrons have a brew time of 16 minutes during this step.)

Part Two:

At this point, all four horned slugs should be added directly to the cauldron.

It is important during this step to take your cauldron completely off the flame before adding your porcupine quills. Failure to do so will result in the potion emitting a terrible

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odor and your cauldron melting. When this happens, the compound is known to cause very painful boils.

Now that your cauldron is off the flame, add two porcupine quills to the potion and then return it to the heat.

Wave your wand five times clockwise and ensure that the heat is still at 363 Kelvin (90°C/194°F).

Let the Potion finish brewing for 17 minutes (This would be 15 minutes for a brass cauldron or 12 minutes for copper).

To Finish:

At this point, take your cauldron off the flame entirely. The potion should be sky blue in color, and the potion will begin to stop steaming as it cools down.

Add Flobberworm mucus (about three measures), and leave to thicken for about five minutes.

Stir the potion to ensure it is of a uniform consistency, and then use a funnel to bottle it in a clear glass or crystal phial. Remember to correctly label your phial before storing it.

Usage Notes: Avoid using this potion on sensitive areas of skin, such as on your face or particularly near your eyes. If you do get it in your eyes, flush your eyes out immediately and seek medical assistance. In some cases, an allergic reaction may occur. These symptoms are usually very mild, and consist of irritation and minor rash. This potion is safe for children, elderly, and those who are currently or may become pregnant. It should only be applied topically and never ingested or injected. If the potion is swallowed, please consult with a healer immediately.

STORAGE OF POTIONS

As we mentioned last time, you should label every phial clearly. When storing potions, it is also important to take into account a few variables to ensure maximum shelf life. The first variable is the amount of light. Some potions are best stored in sunny areas, such as on a windowsill or other area where they have easy access to light. Other potions do not require any particular amount of light or dark to store, as long as they are not exposed to extremes of either. Meanwhile, certain potions thrive in dark areas, and they must be kept away from light exposure at all costs. In the case of potions that require darkness in order to properly keep, it is wise to keep a dark cabinet and to store them in tinted glass or crystal phials to minimize light exposure.

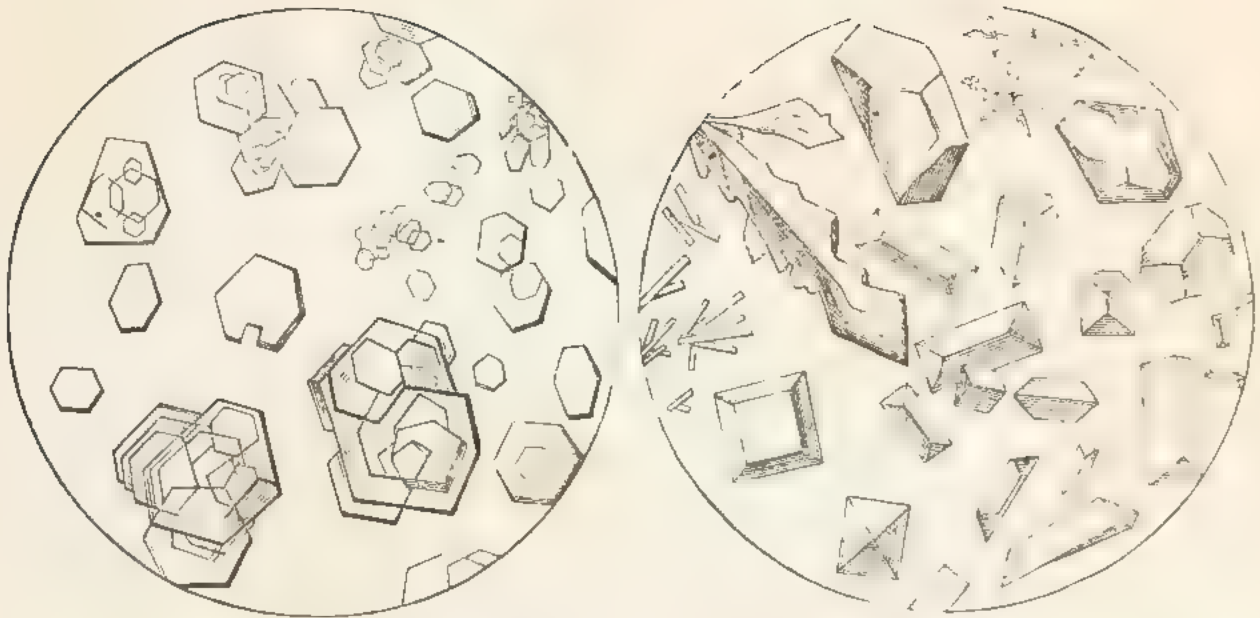
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Temperature is also a factor that needs to be taken into consideration, as some potions store best at room temperature, without any exposure to extremes. Others thrive in a warmer environment, either in direct sunlight or kept in a warmer cabinet with like potions. You may also want to have a slightly cooler cabinet, as certain potions need to be kept cool and away from too much heat exposure.

As you may have guessed, the reason for these specifications is the ideal amount of dynamic energy received by the potion in order for it to work most efficiently. In the case of the Cure for Boils, there are not too many storage specifications: it can be kept at room temperature for up to four years before it should be safely discarded and replaced. The Ministry actually has regular hazardous potion collection days biweekly. It is wise to keep your potions to be discarded away from your current consumable potions, and to prepare to give them to the Ministry employee on that day. There are special receptacles in which you can place the phials in case you will not be home. The Ministry employees possess a special key which allows them to unlock this receptacle from the outside and collect the hazardous materials within.

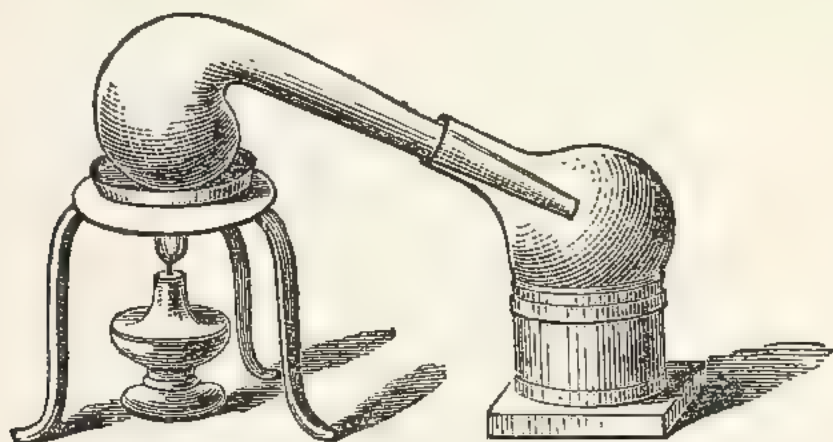
Next week you will be sitting for your first Potions midterm! As such, I will not extend the lesson too much further, as I want to give you time to study and prepare for the exam. There will be a quiz that is required for the midterm, and there will also be an extra credit essay option. Remember that this first half of the year, we focused on potions mechanics, process, and tools. For the second half of the year, we will spend a good deal of our focus on types of ingredients as well as their interactions. Have fun and be sure to study up for your midterms!

LESSON 5: MIDTERM



WE'RE HALFWAY THERE

As all of you are aware, today's lesson concludes with the first midterm exam in your potions education. To hopefully ease the tension and stress, I have taken this opportunity to try out my new Muggle contraption which I found in a knick-knack store over the weekend. This is what is known as a diffuser, in which one adds water and essential oils to create their own aroma for anxiety-reducing relaxation. I thought it could come in handy for the midterm, as many of you might be feeling a bit nervous. Today's blend consists of chamomile and lavender, both of which are known to help promote relaxation and anxiety soothing moods. In later years, you will be learning more about these plants' properties (as well as further uses in potions), both in potions and herbology, so consider this a demonstrative sneak peek!



We do have quite a bit of information to cover before we get to your midterm, and although none of it will be appearing on your exam, I do expect all of you to take notes as this is information that will come up in your later years here in Potions class.

A BIT EXTRA

I have received many owls asking whether it's possible for a potion to undergo a phase transition, or whether the molecules and very fiber of the potion would break apart if such a thing happened. The answer is of course it's possible for a potion to freeze or evaporate! Potions may not be as stable in gaseous form, as a note, but it's entirely possible to excite and slow the particles of a potion just like any other material.

Vaporous potions have tremendous potential to be used medicinally, as demonstrated today by my diffuser sitting on my desk. Instead of consuming the potion in a concentrated form every six hours or so, a patient could simply inhale it over the span of a day. It could also be a milder alternative, as the particles would be further spaced and it would impact the body gradually

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over time, instead of a rapid dose all at once. The only stipulations for this administration would be that it would have to be a potion mild and safe enough to come in contact with the eyes and also not cause respiratory damage or similar side effects. Care should also be taken to ensure that it is only inhaled by those who are in need of it. This could be taken into account with safeguards, but there is still a good deal of consideration to be done on the subject.

In some parts of the world, there is ongoing research into vaporous potions, including one that could help alleviate asthma attacks, if not stop them altogether. Researchers are developing handheld potion delivery systems that would be even more efficient than the Muggle inhaler. Their aim is to not only make it a longer-lasting alternative (one dose per 24 hours) but to also eradicate the onset of any exercise-induced asthma symptoms. This means that those who would normally be inactive due to their afflictions can go running, hiking, biking without the concern that their asthma may interfere. This could also help manage any secondary issues connected to asthma such as depression, obesity, and insomnia.

Alternatively, as with all research also the potential for this catastrophic evil. For instance, vaporize a cure for an to dispense a gaseous form has harmful or negative to harm both magical and a distribution method harm before an antidote opens the possibility of an genocide, and gives those certain groups an even the toxic potion. technology into this form under heavy regulation by Confederation of Wizards permission are allowed to who find the topic intriguing, to wait, as potion use in warfare Six.



done for tremendous good, there is technology to be used towards the same process used to infectious disease may be used of poison (a substance that consequences on the body) non-magical beings. Such would cause catastrophic could be secured. This easy way to commit mass with prejudice towards easier way of distributing Therefore, research and of potion dispensation is the International and only those who have experiment. For those of you you will unfortunately just have will not be discussed until Year

Slightly more unconventional potions researchers have also had a somewhat radical idea concerning potions that could be created in alternative states of matter from the beginning. This would be rather difficult to do in solid form, given the close-packed nature of the particles, but gaseous phase potions in particular have been causing a bit of a stir in the research community in Vienna. I have also had the opportunity to go to some conventions that do, in fact, discuss the possibility of creating a solid-state potion. In these hypothetical situations, a

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strong burst of magical and other non-thermal energies are applied to differing solids. They must be applied in sequence to create a solid with certain qualities. Both a solid and gaseous “potion” may stretch the definition of potion for many more conservative-minded witches and wizards, but this is an interesting step that may lead to a reclassification as well as the rise of new technology and terminology.

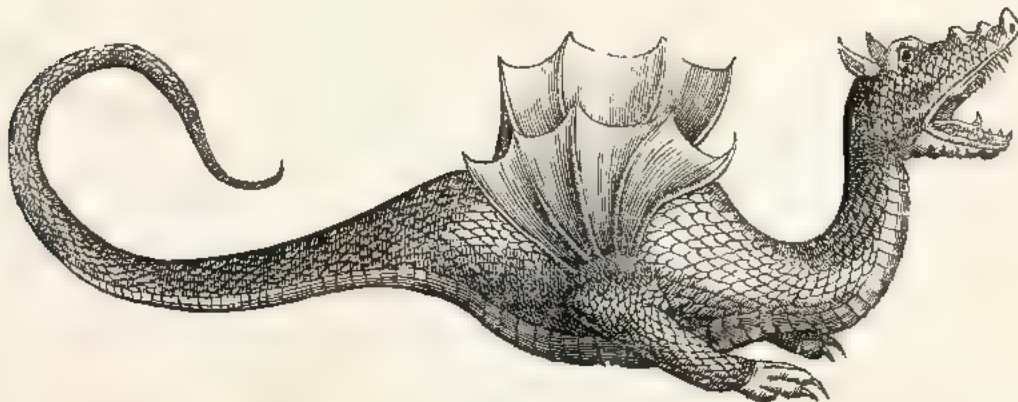
Finally for this lesson, your midterm exam will consist of short answer questions. There is no time restriction on this exam, so please take your time and answer the prompt thoroughly. As long as you have kept up-to-date with the coursework this year, you should have little problem handling the assignment. There is also an extra credit essay that challenges you to think critically and use all of the information you have learned so far this year (including the lab work) while pretending to be a researcher. Again, this essay is not required, but it is a fun way to get you thinking about what you have learned and how it can have real life implications outside this classroom. I have high expectations that all of you will do very well.

LESSON 6: DRAGONS!



'CAUSE I COME FROM THE LAND OF LIZARDS

As we come out of the midterm, we take a bit of a detour to discuss a topic that, while it is by no means a specialty of mine, I was told has been a favorite for young students for many years. Indeed, the dragon is not simply an iconic creature in the wizard community, but also one of the most long-standing romantic images for Muggles as well. Accounts of these great beasts exist in Muggle writing as far back as between 1,300 and 1,000 BCE, when the Epic of Gilgamesh was compiled from even earlier sources. This account described a fanged, fire-breathing guardian of the Cedar Forest. Subsequent Muggle accounts have described great serpent-like creatures, many of whom were more likely basilisks, and other “wyrms” that spread terror throughout Muggle villages.



MUGGLE THOUGHTS

From Muggle accounts, we get an interesting example of the subject raised in the very first lesson of Muggle intolerance to magic. There exists a thirteenth century tale of a Swiss knight named Heinrich von Winkelried who purportedly killed a dragon who was killing cattle and terrorizing the people of Wilen. Whether Sir Heinrich did manage to kill the dragon or whether he took credit for a wizard’s work is something of a debate. However, legend has it that after the dragon was dead, Sir Heinrich came into contact with the dragon’s blood, and it killed him. The story was later considered a myth by Muggles, of course, so there exist no details as to how Sir Heinrich made contact with the blood or the exact effects it had. To note, dragon blood on its own has extensive positive magical attributes, and is used in numerous beneficial potions as well. However, this contact with a substance of such intense magical energy proved fatal to the poor Muggle knight.

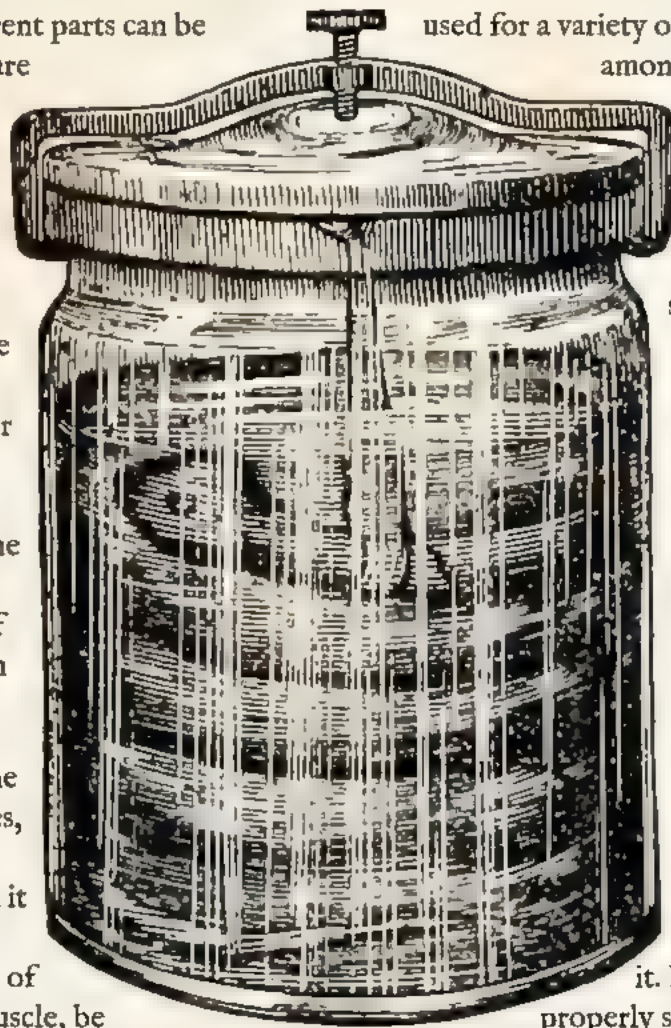
WIZARDING WORLD

In the magical world, these beasts are no less dangerous, but wizards have learned that almost every part of the dragon can be used in potions and other magical endeavors. Hogwarts' own former Headmaster discovered the twelve magical uses of dragon blood, including as an anaesthetic, a painkiller, a cleaning agent, a disinfecting agent, and even in certain poisons. There may even be more uses that we have not yet discovered. The heartstring is used in many wands and is considered one of the most powerful cores. Wizards also use dragon claws, dung, horn, hide, liver, and meat for a variety of magical purposes.

Although these different parts can be indeed dragon parts are utility - one trend not only do they powerful magic, they most magically say, not only is impervious to most Spell being one of the effective ones when dragon, but even after deceased, it can be dragon's individual with magic. This is one can be so difficult to which certain parts of used in potions and in impacting other

Take, for example, the among other purposes, antidotes to strong physically tough, and it it even with a sharp planning to make use of some patience and muscle, be

However, if you try to use the Severing Charm, you will find that it has no effect at all on the liver. Additionally, the likelihood of a backfire increases when trying to use spells to impact the dragon anatomy.



used for a variety of magical endeavors - among the most diverse in throughout is that contain very are also among the resistant. That is to dragon skin spells, the Stunning very few moderately tackling an adult the dragon is hard to affect the tissues and organs of the reasons that it research the ways in the dragon can be modifying and magical work.

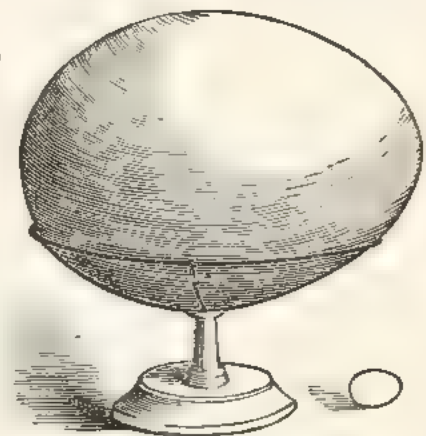
dragon liver, which is often used in poisons. The organ is is often difficult to cut silver knife when it. It can, however, with properly sliced and measured.

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Interestingly, this seems to hold true in varying degrees for all known species of dragons, suggesting that it's a trait that held over from the most recent common ancestor. Without getting too in-depth into evolution today, the most recent common ancestor is the most recent "parent" species of creature from which separate contemporary species are derived. So for example, it is thought that at one time, there was a single species from which all dragons today have evolved. There may have been other related species of creatures at the same time, but they ultimately faced extinction. Different factors, such as geographic separation among groups of this species, caused populations to drift apart in genetic similarity until eventually they became genetically dissimilar enough to qualify as entirely different species, eventually leading to the ten known species of dragon we have today.

Given that this protection lingers even after the dragon's demise and is universally present across dragon species, some dragonologists have surmised that this magical immunity may be coded somewhere within the dragon's very DNA (genetic building blocks). If we do discover that there is a gene that imbues the dragon with a certain immunity to many forms of spellcasting, even beyond creating tools, potions, and instruments which enable the user to have a certain resistance to magical attack, it would have very interesting implications in consideration of how the genetics of other organisms may be modified to increase magical immunity. This opens the conversation to myriad ethical questions, of course, but much of our knowledge and research comes with questions of ethics and morals as we extend our knowledge of the universe.

Another theory is that, rather than a particular part of a dragon's DNA assigning magical resistance to the beasts, their DNA and existence in itself is just so heavily drenched in magical energy that when they become recipients of any further magical energy regardless of intent, it does make some sort of impact, but that burst of energy is more like a tiny droplet falling into a vast ocean. As we currently only know the impact of several wizards and other magical creatures on dragons - and creatures can overtake a dragon when using coordinated effort - we do not know exactly what a strong "blast," for lack of a better term, of concentrated magical energy greater than anything we can now create would do.



*Typical dragon's egg
compared to a chicken's egg*

Researching dragons itself comes with certain red tape and other difficulties. In the year 1709 dragon breeding was outlawed at the Warlocks' Convention. Thus, while there are places like the Romanian Dragon Sanctuary that are dedicated to the preservation and study of dragons, it is impossible to breed them for further study purposes. My brief contact with dragonology was actually at this dragon sanctuary during my graduate studies. We spent a week studying Ukrainian Ironbelly digestive systems and enzymes and, as fascinating as I suppose that would be to some, that was when I realized that dragonology was not the focus for me. Of course,

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even without this restriction of dragon breeding, it is often not exactly the easiest of undertakings to breed dragons.

Another strictly regulated aspect of dragons is the trade of dragon eggs. These are a strict Class A Non-Tradeable Material in the magical world, although of course, as soon as you ban something, many of those who are determined to obtain that thing begin to do so on the black market. Chinese Fireball eggs, in particular, are popular ingredients in fertility and luck potions in certain areas.

I suppose that, as we are discussing dragon ingredients and their use, now is a good time to mention dragon claws, which often find their way onto school campuses in another form of illicit trade. The claws are known to boost memory and intelligence, as well as improve focus, and thus are often sought by students trying to gain an edge as they move towards O.W.L. and N.E.W.T. level examinations. While dragon claw is not addictive, like any other artificial stimulant, it does have its own dangers. The claws of a dragon do not permanently give you more intellect or memory, but rather it boosts chemical levels in your brain to temporarily heighten these attributes.

You are creating and utilizing these chemicals more quickly than your brain is equipped. As such, using this ingredient over a long period of time can ultimately wear down your nervous system (the system that transmits nerve impulses within your body) and lead to some pretty troubling permanent effects. Even short-term use, when the effects wear off, often leads to a kind of functionality and memory “crash”. As such, I strongly urge you as you move in your years not to fall victim to seeking a quick, temporary fix for the sake of a grade when you could instead gain real, permanent knowledge and understanding of a subject.

I suppose with that warning, I will let you go for the day to complete your quiz and answer the essay question. There is a lot more reading to be done about dragons, of course, but I just wanted to impart a few small, often overlooked details that I find fascinating about the ever-popular beasts.

For your essay this week, I would like you to consider the benefits, dangers, and ethical questions associated with researching dragon DNA to uncover the source of their great magical resistance. The essay should be at least 250 words, although you are allowed to submit it as a short story, presentation, video, or other method if you choose.

LESSON 7:

INGREDIENTS: MAGICAL, MUNDANE, AND OTHERWISE



BACK TO THE START

Today we will be three different types of ingredients: magical, mundane, and transitional. This may seem a simple topic, but it's important to recognize the difference between the three categorizations, though all three broadly encompass a range of animal, plant, and mineral ingredients. Transitional ingredients are particularly fascinating, as we still have more to discover about their hidden properties and composition. Let's dive in, shall we?

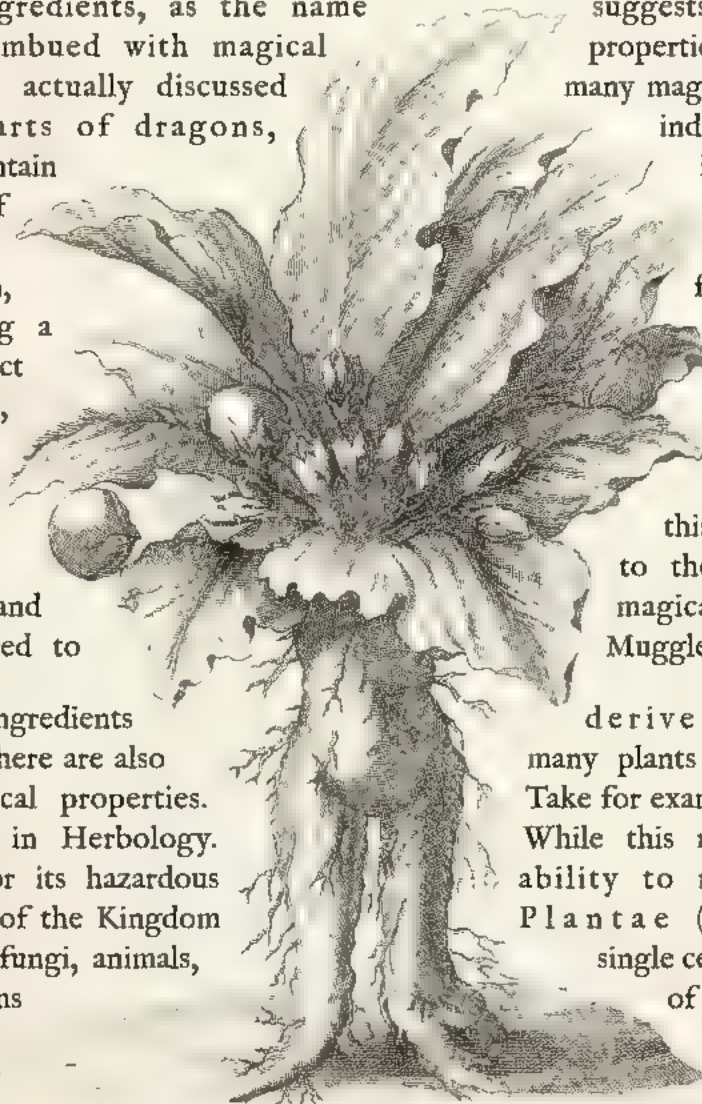
HEADS ON SCIENCE APART (MAGICAL INGREDIENTS)

Magical ingredients, as the name already imbued with magical state. We actually discussed lesson, as all parts of dragons, sources of magic, contain concentrations of to use dragon claws, or dragon horn, would be utilizing a created a magical effect you added charms, magical methods. As the beginning of as the beginning of quite often intolerant their natural state, and never be administered to

Quite often these ingredients creatures, although there are also own inherent magical properties. which you studied in Herbology. resemble a beast for its hazardous Mandrake is indeed of the Kingdom differentiation from fungi, animals, other non-plant forms dangers that arise this plant, it has very

suggests, are ingredients properties in their natural many magical ingredients last independent of other i n t e n s e magic. If you were blood, dragon for example, you substance that whether or not potions, or other we discussed in the lesson as well this year, Muggles are to these ingredients in magical potions should Muggles.

derive from magical many plants that possess their Take for example the Mandrake, While this magical plant may ability to make noise, the Plantae (a biological single celled organisms, and of life). Despite the from repotting useful qualities,



particularly for strong antidotes to poison.

You will find that magical ingredients are often much faster in taking effect than mundane pills or creams. This is not simply an inexplicable side effect of magic, but rather because the ingredients' magical properties tend to temporarily speed up metabolic reactions within the body. Metabolism refers to the processes that the body utilizes to release energy that is used to sustain life and grow, often from consumed food, as well as eliminate remaining waste products from the body. Most often, your body will break down these nutrients at a fairly steady rate, although this rate varies based on the individual. However, it has been found that the consumption or application of magical ingredients often provides a catalyst and speeds up this rate of metabolic consumption until the magical ingredient has been absorbed into the bloodstream. A catalyst is defined as something which speeds the rate of a chemical reaction.

While the effects of magical ingredients are also inherently more intense than those of the mundane, this increased absorption and processing of the ingredient also contributes to magical ingredients, and potions utilizing them, having a much more intense effect than mundane ingredients. Imagine a "time delay" capsule, for example. This pill releases a certain amount of a medication or cure every thirty minutes. Thus, the impact of the medication is gradual and somewhat mild. Now imagine you added an element to the pill that would make it disperse all of the medication at once. The impact would be drastic, and both effects and side effects would be felt much more intensely. Often, even when utilizing the healing effects of mundane ingredients, adding a magical one will provide this jolt. On the one hand, the increasing of positive effects and decreasing of negative ones will happen much more quickly, but this rapid shift can be fairly brutal on the body. This is also why the very young, very old, pregnant, and those with otherwise weakened immune systems are often discouraged from taking potions without consulting a healer.

PULLING YOUR PUZZLES APART (MUNDANE INGREDIENTS)

The magical community is often hesitant to give appropriate praise to the mundane, be it the study of science, the cultivation of the land, or the application of non-magical ingredients in cures or potions. However, mundane ingredients provide a biologically gentler alternative for those who care to avoid the harsh impact that magical ingredients so often cause. Take, for example, a stomach ache. There are powerful potions that will remove stomach aches, nausea, or cramps in a matter of minutes. However, many of these potions, if used over long periods of time, can have permanent effects on the digestive system, and in the long term can weaken the stomach. It's possible that this comes as a result of the body beginning to rely too much on the potion for proper digestion and weakening in its own ability to operate.

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In contrast, ginger, a mundane root, can relieve digestive inflammation as well as ease motion sickness. It does not have the drastic effects of a potion, and would not cure extreme stomach ailments, but it is also mild enough to drink in tea every day if one chooses. Another positive point is that young children can take it, and it's exceedingly rare to have a ginger allergy. Also, unlike many stomach curing potions, which taste rather unpleasant and must have mundane items added when brewing in order to make them stomachable (so to speak), ginger candies are often delicious on their own.



This concept of mundane additives brings up another point when considering mundane and magical ingredients. I believe this is a point that may have been mentioned in passing in Herbology, but deserves further discussion. Mundane ingredients are often added to potions even when they are not in the initial ingredients list. This is often to improve flavor, particularly in the case of lavender or mint. However, mundane ingredients can also often be added to counter slightly unpleasant side effects in potions. If, for example, a potion causes stomach distress in curing an ailment, sometimes potioners will add ginger, rose, or another mild and mundane ingredient in order to temper this effect. There are, of course, exceptions, and one should never add a supplementary ingredient to a potion without verifying that it will not ruin the end product, but mundane ingredients often do not throw off the temperament of a potion.

Magical ingredients, on the other hand, tend to be more finicky, for lack of a better term. While mundane ingredients often interact well with other magical and mundane ingredients, adding the wrong magical ingredient to a potion can have fatal effects. While it is important to be careful when adding mundane ingredients to a potion to improve appearance, smell, taste, or mitigate side effects, it is crucial to never try to add an unlisted magical ingredient without consulting a talented Potioneer first. This has to do with the energy magic releases that is able to break and reform chemical bonds, thereby altering the identity of certain molecules in a way that simple cauldron heat usually cannot. It can be difficult even for some talented potioners to predict how magic will reconstruct the bonds of two otherwise innocuous magical ingredients.

QUESTIONS OF SCIENCE, SCIENCE AND PROGRESS (TRANSITIONAL INGREDIENTS)

Finally, we reach what are sometimes called transitional ingredients. These are ingredients such as dragonfly thoraxes, which on their own, have no magical qualities. However, when used in conjunction with magical ingredients as well as the magic of a witch or wizard, will display magical properties themselves. Dragonflies are known to be beautiful, albeit mundane, creatures: they hold symbolism of transformation and change in many cultures, and Muggles often theorize they have their own hidden magic, but they never truly show a strong magical inclination.

Creating a mixture or even some non-magical compounds with dragonfly thoraxes will not give the consumer any additional magical boost, beyond an extra taste of protein. However, when brewed in potions with other magical ingredients, the magic involved in the rest of the process is able to trigger some hidden magical quality in dragonfly anatomy. The thoraxes, for example, are used in potions for energy and endurance, for example the Girding Potion. The wings are often used for concoctions assisting with speed of thought and action.

It is still unknown what may cause this latent magical quality in certain plants and species. It is likely something in their genetic composition, but it's unclear what that "something" is. Some theories suggest that these mark the signs of an early development of magic in species that were once not magical, but are slowly developing a magical ability of some sort. Remember, in your History of Magic class, you also read about the theories for the beginning of our own magic, so species possessing magic has been proven as something that can evolve and develop over time. Some even hypothesize that dragons were once much like the extinct creatures of the dinosaur period, but over a much longer period evolved into the beings of incredible magic that they now are.

Others suggest that this hibernating form of magic is simply another expression of magical gift or talent. Perhaps this spark adds a certain quality to the dragonfly's own life in a way we cannot yet perceive that does not have to do with perceivable spellcasting or grand displays of magic or power. This magic that we cannot perceive may be what draws Muggles and wizards alike to these ethereal creatures: sensing that there is some breed of allure or magic that we have yet to access or understand. I tend to be of the opinion that, as many forms of magic as we see in explicitly magical beings and creatures, from centaurs to house-elves to witches and wizards, it makes more sense that many other expressions of a magical gene of some sort exist in the world.

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There is another more romantic inclination that some have, though it isn't currently a very popular theory. The thought is that these small creatures with untapped magical talent were once very powerful elementals on Earth. Or, in a more biological sense that they were much like fairies, although some folk tales tell of them being much more powerful than even we witches and wizards are. Something happened to the magic in these tales, either a great suffering and loss as a community or a simple fading of faith and power, and they slowly diminished.

Eventually magic became a vestigial organ, or a part of the creature that once held use, but slowly fell into idleness. An example of this is our own appendix and even our wisdom teeth. When I was young, my mother used to speak of the little inexplicable displays of magic in the world this way to my cousins and myself: that powerfully benevolent magical beings once ruled our world, but a great sadness caused them to diminish and eventually disappear. This is, of course, the least likely of scenarios, but in lieu of answers, some will (entirely understandably) hold whichever notion gives them the most happiness.



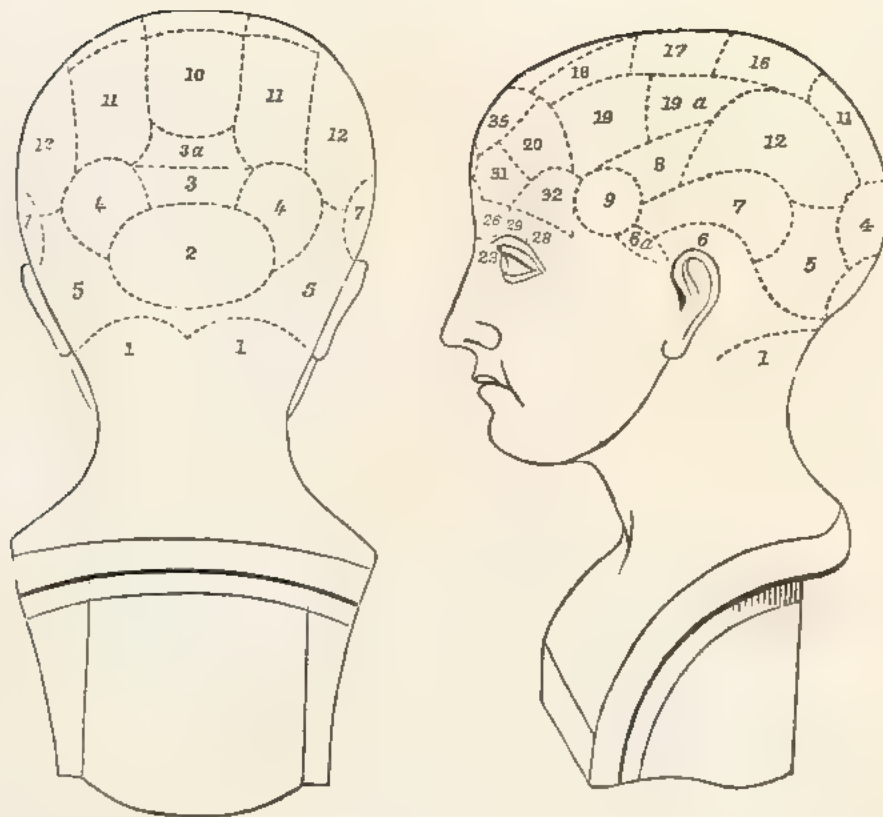
That is all for today's lesson! I hope you took careful notes, as ingredients are a crucial building block to your foundational knowledge of brewing. Please note that you have a quiz to complete for homework this week and I anticipate everyone is excited for the lab next class!

Prof. von Graft

LESSON 8:

LAB #2: FORGETFULNESS

POTION



AT THE CORE I'VE FORGOTTEN

Welcome my dear students to our second lab for this term. I am so sorry to have been sidetracked by my own musings. I am developing my own formula for a potion and it can get me quite distracted. But onward to today! We will be brewing the Forgetfulness Potion. Perhaps this is not the best choice of potions to have you brew right before the final, but be warned: a note saying you took Forgetfulness Potion and do not remember this year will not excuse you from the exam.

The specific history of the Forgetfulness Potion is, unfortunately, somewhat a mystery to us, as its discoverer, a 16th century Spanish witch by the name of Federica Quimia, had the notion of testing the potion on herself as she experimented. Luckily we do have her final recipe in note form, but she did not record the process that brought her to correctly brewing the Forgetfulness Potion and, as one may imagine, she forgot everything of the process that led to her discovery. Ms. Quimia discovered a variation far more potent than what we currently call the Forgetfulness Potion, and the concoction we will be brewing today only causes mild carelessness and difficulty remembering minor details for its duration. Her unfortunate loss of mental capability may have also derived from so many unsuccessful attempts at brewing it.



The Forgetfulness Potion is often used during pranks to cause the unsuspecting victim to become scatterbrained for a brief time, but a mental healer may also use the potion to treat extreme anxiety disorders or those suffering from trauma.

As in our previous lab, you can find the instructions next to your cauldron as well as on the board in front. For this potion, you also have the option of adding a mundane ingredient for taste, a concept discussed in our last lesson.

FORGETFULNESS POTION

Ingredients:

2 drops of Lethe river water
2 Valerian sprigs
4 mistletoe berries
2 spoonfuls of honey OR 2 standard
measures of mint leaves (optional)

Estimated Brewing Time:

Pewter cauldron: 60 minutes
Brass cauldron: 51 minutes
Copper cauldron: 45 minutes

Instructions:

Part One:

Take your dropper to add two drops of the Lethe river water to your cauldron.

Heat your cauldron to 394 Kelvin (that is 121°C/250°F) for 20 seconds, then turn down the flame.

Add the two Valerian sprigs to the cauldron, then use your wand to stir your cauldron clockwise three times.

Leave your potion to brew in your pewter cauldron at 383 Kelvin (45°C/110°F) for 30 minutes. During this step, the potion will be a deep blue and is likely to emit red sparks. (This would be 25 minutes in your brass cauldron or 22 minutes in Copper.)

Part Two:

Add the four mistletoe berries to the mortar.

Optional step: Add the two spoonfuls of honey OR two standard measures of mint leaves to the mortar as well.

Grind with pestle until the ingredients are thoroughly mixed.

Add two measures of this mixture to the cauldron and stir with your wand counter-clockwise five times.

Let the potion finish brewing for 20 minutes. (This would be 16 minutes in a brass cauldron or 13 minutes in a copper cauldron.)

Take your potion off the flame entirely. The potion should now be a glimmering orange-red, and will still occasionally give off sparks. It will smell like any additive you

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may have used (honey or mint). If you did not use one, it may smell a little bit like burnt cinnamon.

Stir the potion to ensure it is of uniform consistency and then transfer it to one of the glass phials. Remember to properly label the phial as we have discussed.

Usage Notes: Forgetfulness Potion's effects will usually last six to eight hours. It is important **NOT** to take Forgetfulness Potion the same day as engaging in any important life decisions or changing any passwords or security measures. Those with neurological problems or any history of brain injury should not take this potion, as it can sometimes result in permanent loss of memory. Always consult with a healer before taking this potion for psychological reasons. It should not be given to children under five or those who are or may become pregnant.

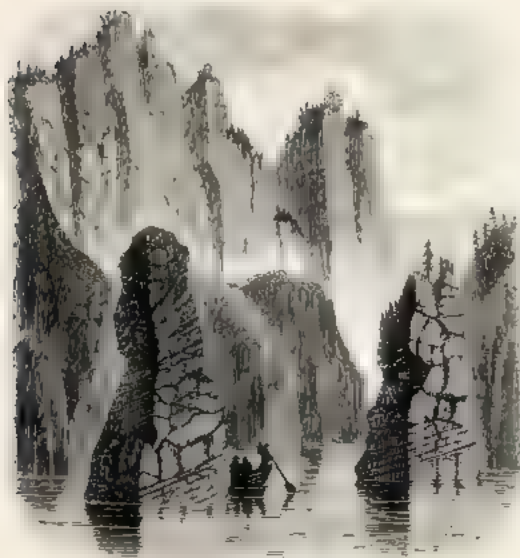
Storage: The Forgetfulness Potion should be left to mature at room temperature for two days. It should be stored in a dark, cool place, and can be kept up to six months before requiring safe disposal.

THE RAIN THEN SENDS DRIPPING (LETHE RIVER WATER)

Lethe river water is an interesting and rather unique ingredient. It is named after the Muggle Greek mythological location known as the Lethe River, one of the five rivers of the Underworld. In the myth, those who had died drank from the river in order to lose memory of their lives before passing on to the afterlife. Lethe river water, of course, does not truly come from Hades, but rather from the Kaybetti River, a small river in Turkey near the town of Ören. It has been enchanted by wizards to escape Muggle detection for nearly a thousand years now, but prior to that, it's no wonder Muggles thought it to be a thing of the Underworld. In fact, Lethe river water does exactly what the mythological river was said to have done: it acts as a powerful memory suppressant, and magical and non-magical alike are prone to its effects. Even in small doses, it can lead to serious memory loss or forgetfulness. However, when consumed in a high dosage, it has been known to cause the body's systems to forget how to function properly, and can lead to coma or death, so it's vital to be careful not to overdose your potion when using this ingredient.

An interesting aspect of Lethe river water is the fact that, molecularly, it appears exactly like any other water molecule. We have not been able to find any difference structurally between Lethe river water and regular, mundane water that can explain why it has this powerful magical component. The water is also lacking any fungus or bacteria that may explain this phenomenon, and in fact, it is among the cleanest water on the planet, likely owing to its strong magical effect, making it difficult for life to survive under its surface.

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There are currently two popular theories as to how Lethe river water got this mysterious magical quality. The first theory is the older of the two: many scholars believe that at one point, a very powerful early witch or wizard enchanted the very source of the river for reasons unknown. Perhaps it was done for defensive or offensive reasons during a war: remember that at that time, Muggles and wizards still often worked side by side. This magical being may have been operating on behalf of an army or governing body to either protect his or her home from invasion or to use the water as a means of overthrowing a competitor in his or her own land.

If this is the case, then it would be interesting to study the particular enchantment that was used to create such an enduring spell, for the witch or wizard who cast it would certainly be long dead at this point. It would be likely that it involved some sort of permanent charm or restructuring of particles at the river's source, rather than creating a spell to permanently impact every particle of water that flowed through its banks for eternity.

Another theory that involves the source of the river is the notion that there is some sort of magical plant or fungus that lives at the river's source, and that as the water passes through or over that particular life form, some of the forgetfulness magic is imbued into the water molecules. This does not change their structure, but is simply a magical "residue" that is carried down the Kaybetti. Any particles of the plant or fungus itself may be filtered out of the water by the time it reaches the portions of the river where witches and wizards can bottle it to use or sell. In addition, it is important to note that no witch or wizard that we know of has ever reached the source of the river. It is possible that some beings may have reached the source, but whatever forgetful magic was there was powerful enough to wipe their memory of the experience, keeping the source of Lethe river water a mystery.

That concludes our second lab and our last class before the final. I hope you enjoyed brewing your Forgetfulness Potion and that you were successful. This week we will be having our quiz, and I want you to write a 250 word essay about the uses of the Forgetfulness Potion. The prompt within the assignment will have further details regarding what I expect you to discuss in the essay. Remember to study hard and prepare yourself for your final exam, which you will be taking next week.

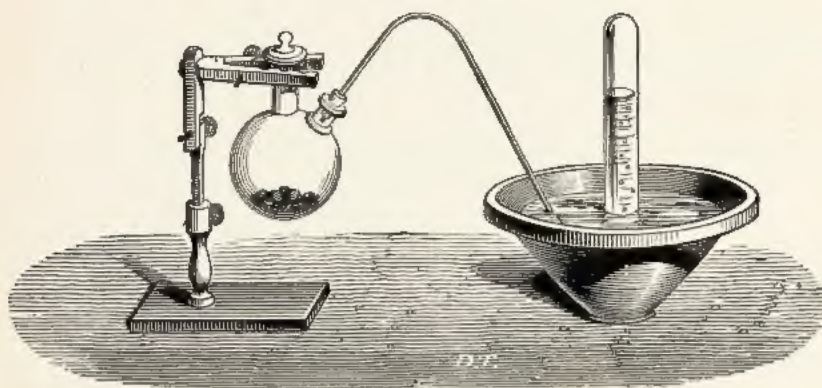
LESSON 9:

FINAL EXAM



THE END IS THE BEGINNING IS THE END

Welcome to your final class for your first year of Potions. As with all good things they must, unfortunately, come to an end. To lighten the mood, I decided to brighten up our classroom a bit with some of my favorite decorations. I hope that all of you feel as though you have a solid foundational knowledge of what potions are as well as an inkling of how they work and interact with the body. I will keep today brief so as to allow you time to finish studying for your final.



As we look ahead to Year Two, we will have two labs in the fourth and the eighth weeks of class. We will also go into a little more detail on the specific neurological and physical processes that potions impact. Ingredients and their different characteristics will be another topic of discussion. You should have a good start on this due to your studies in Herbology with the brilliant Professor Rowan, and her class and mine will only overlap more as the years go on.

In addition, I highly recommend any Potions students take Care of Magical Creatures with Professor Anne and Professor Cattercorn, starting in Year Two. As you've noticed, many of our ingredients do come from the wide world of plants and instead are body parts of various levels of squishiness ranging from eyeballs, hearts, and whole slugs to talons, teeth, toenails. While Care of Magical creatures doesn't encourage you to dissect animals -- and the lovely professor would have my head if they heard I was encouraging you to try -- you do gain a wealth of knowledge about their properties, and this course will provide you with much needed additional information. If you so choose, it may also prepare you to humanely raise and harvest bits of these creatures for your own potions use later down the road. However, on the topic of humane practices, I would also like to discuss more about the history and means of obtaining ingredients for potions. This includes ensuring you are fully aware of the best legal practices and stipulations that come with obtaining and using certain plants, animals, or their parts. Lesson content will also begin to get progressively more in-depth as you move through your years here at Hogwarts. Plus, my expectations will be higher when it comes to assignments and

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essays, so maximum effort is strongly advised. I am always around to answer questions so please do not hesitate to ask before submitting your homework.

Now, as you consider the final exam, I urge you to think about what we discussed this year. We discussed the fundamental question of what is a potion? We also discussed basic means of brewing a potion, the instruments we typically would use in a home potions closet, and some specific qualities and effects of potions. We also spent a week discussing dragons, one of the most magical creatures in our world. You even had the practical lessons of brewing two successful potions! Think about how your perception of potions has changed over the course of one year. Are your perceptions the same? If not, how have they changed? These questions will be important to consider and reflect upon in your final essay.

One last reminder as you prepare for your final exam. Potions is a cumulative subject. You will need to remember the concepts that you learned this year in the future for various purposes. This extends from overarching concepts like the importance of measurements, attention to safe potioning practices, and ingredient types, as well as very specific details, like ingredient properties, lists of ingredients for certain potions, and potential allergies. All of the information used this year will, in some way, help you as you progress through the course. This works both ways, though! As you progress, I hope you are applying the methods and concepts from future lessons to improve your overall brewing of your first few potions. Practice makes perfect, and you'll find that your fiftieth batch of the Cure for Boils will be much more successful than your first. It's only up from here!

Enough of that though! Your exam awaits you. There is no time limit so I urge you to carefully consider your answers before submitting. My expectation is to see everyone of you back in my class for Year Two. After your exam, please help yourself to some of my favorite sweets from Honeydukes. They can be found on the table near the door on your way out.



